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Serial No.: 09/432,022

Filing Date: 10/29/1999

Attorney Docket No. 100.116US01

Title: SYSTEMS AND METHODS FOR HOLDOVER CIRCUITS IN PHASE LOCKED LOOPS

REMARKS

The Office Action mailed on April 7, 2005, as well as the art cited, have been reviewed. Claims 1-31 are pending in this application.

Rejections Under 35 U.S.C. § 103

Claims 1, 2, 3, 7, 23, 30 and 31 were rejected under 35 USC § 103(a) as being Maddy (U.S. Patent No. 5,334,952) in view of Walley (U.S. Patent No. 6,606,364) in view of Momtaz (U.S. Patent No. 5,950,115).

Applicant respectfully traverses the rejection of these claims.

Claim 1 of the present application is as follows:

1. A phase locked loop circuit, comprising:
 - a differential phase detector that receives an input signal and a feedback signal and produces a differential output signal;
 - an electronic selector circuit having:
 - at least one first input coupled to the differential output signal of the phase detector; and
 - a second input that is responsive to a detected state of the input signal;
 - a loop filter circuit having an operational amplifier, the operational amplifier having at least one amplifier input, wherein the electronic selector circuit provides the differential output signal of the phase detector to the amplifier input;
 - a voltage controlled oscillator coupled to an output of the operational amplifier and providing an output frequency for the phase locked loop circuit; and
 - wherein the electronic selector circuit is operable to control the amplifier input to hold the output frequency of the voltage controlled oscillator at a

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substantially constant frequency when the input signal to the phase detector is interrupted.

The Office Action took the position that phase detector 203 of Maddy teaches "a differential phase detector that receives an input signal and a feedback signal and produces a differential output signal" as recited in claim 1 of the present application. In particular, the Office Action takes the position that line 219 comprises "an input signal" as recited in claim 1 of the present application. It is noted that claim 1 of the present application further recites "wherein the electronic selector circuit is operable to control the amplifier input to hold the output frequency of the voltage controlled oscillator at a substantially constant frequency *when the input signal to the phase detector is interrupted.*" Maddy clearly indicates that the signal on line 219 is a reference signal (see e.g., Maddy, column 4, lines 35 - 50: "The output reference frequency is provided by divide-by-M circuit on line 219 is [sic] coupled to a first input of phase detector 203. The divided output frequency is provided by divide-by-N circuit 211 on line 226 to a second input of phase detector 203. Phase detector 203 generates a signal on line 221 that is proportional to the phase difference between the divided reference signal on line 219 and the divided output signal on line 226. Preferably, the output signal from phase detector 203 is pulse width modulated (PWM) meaning that the phase difference is indicated by a pulse width of a pulsed output on line 221. Alternatively, phase detector 203 can output an analog signal. Phase detectors with both PWM output and analog output are well known, and commercially available as discrete or integrated circuits."). In other words, the "input signal" that is cited in the Office Action with respect to Maddy is a reference signal.

The relevant portion of Momtaz cited in the Office Action relates to phase synchronization with *an incoming data stream*. See, e.g., Momtaz, column 10, lines 36-51. The Office Action cites the discussion in Momtaz related to the interruption of an incoming data stream found at column 10, lines 42-51 with respect to the recitation of the following language in claim 1 of present application: "hold the output frequency of the voltage controlled oscillator at a substantially constant frequency when the input signal to the phase detector is interrupted". In

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other words, the Morntaze teaching relied upon in the Office Action relates to phase synchronization with, and the interruption of, an incoming data stream while the Maddy teaching relied upon in the Office Action relates to phase synchronization with a reference signal. It is respectfully submitted that one of ordinary skill in the art would have had no motivation to make the proposed combination given this difference.

Furthermore, the Office Action took the position that switch 217 of Maddy teaches "an electronic selector circuit having: at least one first input coupled to the differential output signal of the phase detector; and a second input that is responsive to a detected state of the input signal" as recited in claim 1. In particular, the Office Action asserts that line 231 is responsive to a detected state of the input signal" as recited in claim 1. Specifically, the Office Action asserts that line 231 is responsive to a detected state of reference signal 219 via signal 221 and other signals. This is contrary to what is actually shown in FIG. 3 of Maddy. Figure 3 of Maddy clearly shows that line 231 is output by logic circuit 301 and is not responsive to signal 221.

Accordingly, it is respectfully requested that the rejection of claim 1 be withdrawn.

Claims 2, 3, and 7 ultimately depend from claim 1 and therefore, for at least those reasons set forth above with respect to claim 1, it is respectfully requested the rejection of these claims be withdrawn.

Claim 23 was rejected using reasoning similar to the reasoning used to reject claim 1. Therefore, for at least those reasons set forth above with respect to claim 1, it is respectfully requested that the rejection of claim 23 be withdrawn.

Claims 30 and 31 ultimately depend from claim 23 and therefore, for at least those reasons set forth above with respect to claim 23, it is respectfully request that the rejection of these claims be withdrawn.

Allowable Subject Matter

Claims 15 and 22 are allowed.

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Claims 4-6, 24-29 were objected to as being dependent upon a rejected base claim, but were indicated to be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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LOOPSCONCLUSION

Applicant respectfully submits that claims 1-31 are in condition for allowance and notification to that effect is earnestly requested. If necessary, please charge any additional fees or credit overpayments to Deposit Account No. 502432.

If the Examiner has any questions or concerns regarding this application, please contact the undersigned at 612-455-1681.

Respectfully submitted,

Date:

7/7/2005

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